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The Impact of Inflation on the Agency's R&D Program

16 Dec 1974

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Executive Summary

During the past two months, this study group has investigated the inflation issue as it relates to the Agency's research and development program. This effort was conducted as one of several studies requested by the Director in his 1975/1976 Financial Guidance Memorandum to the Deputy Director for Science and Technology.

The major findings and conclusions of the group are summarized as follows:

- Inflation has had a severe impact on the Agency's R&D program over the past eight years. Actual (or current) contractual dollars have declined by 35%. Inflation has compounded this decline in current dollars, resulting in a net 67% reduction in real dollars from 1967 to 1975.
- The extremely high current and projected rates of inflation make all the more prohibitive the traditional guidance of preparing budgets in terms of today's prices (i.e. current dollars).
- Budgeting for inflation is a realistic, attainable, and desirable approach to presenting our R&D program to higher review levels and avoiding further unintentional erosion of the R&D dollar.
- The principle of budgeting for inflation is applicable not only to R&D but also to other areas of Agency financing. The group did not investigate these other areas, but the potentials for applicability elsewhere are obvious.
- Various alternative approaches to budgeting for inflation were investigated, two of which meet the standards of flexibility as well as feasibility.

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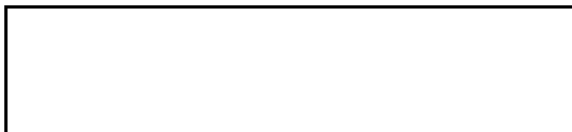
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The study group recommends:

- that the Agency budget for inflation by the inclusion of an appropriate factor in each line item in the R&D contractual program (Alternative II in this report).
- that the CIA Comptroller initiate action to obtain concurrence from OMB which would allow inflation to be covered not only for the R&D contractual program but also for other affected portions of the Agency's budget.
- that the CIA Comptroller establish appropriate guidelines and rates of inflation to be used, taking into consideration the findings of this report, inflationary estimates developed by OER, and current procedures utilized by DoD and in the community as appropriate.

The group further recommends that, to insure the best use of scarce R&D dollars, guidelines specifically related to the inflation question be extracted from existing materials and amplified along the lines of Exhibit B. The Office of Logistics should publish such guidelines in a convenient format for use by Agency contracting and project officers.

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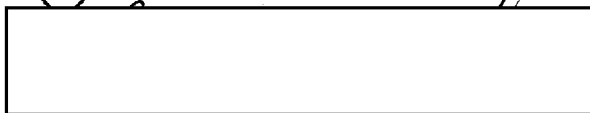
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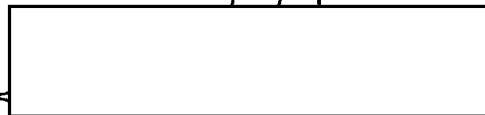
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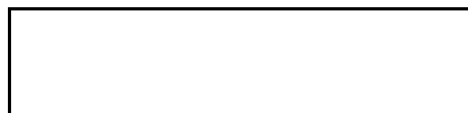
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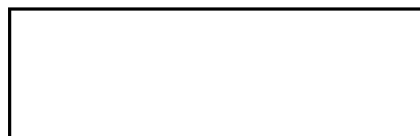
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The Impact of Inflation on the
Agency's Research and Development Program

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I. Introduction

In his FY 1975/1976 financial guidance memorandum to the Deputy Director for Science and Technology (23 August 1974) the DCI requested an evaluation and recommendations on the impact of inflation on the Agency's R&D contractual programs. The DCI indicated he was interested in guidance to be provided to program managers to enable them to identify and counter the threat which inflation poses for R&D efforts on the one hand, and to protect the interests of the taxpayer on the other. (Note: This is not necessarily a dichotomy. The interests of the taxpayers are served, obviously, by minimizing government spending. But, they are also served by a viable, soundly financed intelligence effort.) The DCI's overall goal was to prevent needless dilution of our R&D effort.

In response to the DCI's charge, the DD/S&T convened a study group consisting of:

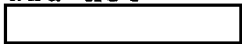
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The study group recognized that its recommendations could have a major impact in two forthcoming efforts:

- in the preparation of the President's FY 1976 budget
- in the submission of Five Year Projections (FY 1977 - 1980) as required as part of the 1976 budget submission under PL 93-344.

Because of the limited time available to have an impact on 1976 Budget deliberations, the study group concentrated on the impact of inflation on the Agency's R&D effort and actions which could be taken to negate the erosion of the R&D dollar. The group did not investigate other Agency programs, e. g.,  SIGINT activities, procurement of supplies, and rental of ADP equipment, all of which have also been affected by inflation though in differing degrees. The principles investigated in this study for R&D could have similar application in these areas of the Agency's Budget as well.

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Further, the group chose not to examine the precise impact of inflation on contractual programs in great detail. To have done so would have required extensive investigation into industrial costing procedures and technical economic analysis of the industry groups concerned, including their suppliers, raw material needs, investment patterns, inventory valuation concepts and a whole host of subjects which influence the economics by which contractors operate and for which data is scarce or closely held.

By drawing upon current analytical efforts by OER for the CIA Comptroller and by the IC Staff for the DCI's program recommendations, the study group was able to

- assess the impact of inflation on the Agency's R&D effort
- formulate policy options for consideration by the DD/S&T and the DCI.

II. Findings

A. The Impact of Inflation on Contractual R&D Programs

Background.

For more than a decade, personnel costs have been pacing inflation in the cost of intelligence. By FY 1974, however, the costs of goods and other services were rising more rapidly than personnel costs. Higher prices for commodities were contributing to a "cost-push" type inflation, and recent increases in the wholesale price index have not yet been passed on fully to the final purchaser of goods and services. Econometric models indicate that substantial inflation will persist throughout 1975 and probably 1976 as well before settling down to a moderately high rate for the remainder of the decade.

For the intelligence world, the recent high rates of inflation have coincided with a more stringent application of outlay ceilings. This has meant heavy going for any "deferrable" program, and the Agency's contractual R&D was no exception.

25X1A Though projected R&D obligations for FY 1976 are
25X1A [redacted] less than FY 1967, the
 comparable purchasing power of these obligations is only
25X1A [redacted] From FY 1967 to
 FY 1976, the purchasing power of the R&D

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What have we lost with the 57 percent reduction of the R&D program? Large projects dealing with technical collection [redacted] have been virtually eliminated. Other developmental support to Agency operations and programs has been reduced significantly across the board. Exploratory research on new technology and new techniques to advance future capabilities has also been curtailed.

To continue to regard R&D as a deferrable expense would be, in the long run, a costly course. Intelligence technology is highly dynamic and we need to keep up with and apply the state of the art. In addition, technology may be harnessed to help us to cope with resource limitations. Aware of these needs, the managers of R&D programs are intensely concerned with developing procedures to protect their programs from the wasting effects of inflation.

Measuring inflation.

At a 3 percent rate of inflation, the R&D dollar shrinks only 15 percent in 5 years; at a 10 percent rate, it shrinks 40 percent; and at a 15 percent rate, it shrinks 55 percent. Managers not only need to be aware of the past impact of inflation on their programs; they need early warning of the impact of inflation on the costs of their future projects.

The Aeronautical Systems Division of Air Force Systems Command has developed price escalation indices for both development and procurement. The historical series of components* of these indices were regressed against the GNP deflator to obtain equations expressing the relationship of each component to the GNP deflator.

*Airframes, engines, and avionics.

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Using these equations and a forecast of the GNP deflator from a reputable econometric model, such as the Wharton model, one can derive logically defensible projections of future R&D cost inflation. The Intelligence Community Staff is applying this technique to studies of the anticipated impact of inflation upon intelligence expenditures.

The past and anticipated impact of inflation is summarized in the following table:

The Shrinking R&D Dollar:
Inflation Factors for R&D
(1967=100)

1967	100	1974	62.0
1968	94.4	1975*	54.5
1969	88.5	1976*	49.3
1970	83.0	1977*	45.7
1971	78.4	1978*	42.4
1972	74.1	1979*	39.3
1973	68.9	1980*	36.5

*Projection

Until recently, the Agency has used a deflator based upon the index of the changes in the cost of Federal goods and services. Expressing 1967 as 100, the index of FY 1974 was 59.8. If this is compared to the corresponding index for R&D, which was 62.0, it is seen that the two indexes differ by only 4 percent after 8 years. We conclude that the R&D index certainly does not exaggerate the impact of inflation.

The R&D index meets two conditions that are essential to its use in a strategy to plan for inflation: (1) it provides a valid measure of past trends, and (2) it can be estimated on the basis of updated econometric projections of the GNP deflator.

An analysis of current and projected inflation factors for the major cost elements in the Intelligence Community is attached as Exhibit A.

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R&D and Productivity

The situation created by relatively fixed budgets, erosion of buying power through inflation, and constant or increasing responsibilities highlights the importance of providing for increased productivity from available resources. The principal factors that are generally believed to affect productivity are creative and innovative management; technology changes, which may require changes in capital investment; and the skill and attitude of the personnel involved. Technology changes, of course, result from past and ongoing research and development programs. Some studies have indicated that the return from investment in R&D is significantly greater than from equivalent investment in either capital or labor. A definitive estimate of these marginal returns is difficult to arrive at, but existing econometric studies provide reasonably persuasive evidence that R&D has a significant positive effect on the rate of productivity increase. This indicates that consideration should be given to providing increased Agency resources to R&D programs that can increase productivity.

B. Current Budgetary Guidelines and Practice

Long established Office of Management and Budget guidelines prescribe generally that price levels "will be the same during the budget year as at the time the estimates are prepared" (OMB Circular A-11). The only stated exceptions to this guideline applicable to the Agency are that a) increases for average personnel compensation for the budget year from all causes "should be no more than 1% unless specifically justified" and b) "wage board increases expected to be granted during the remainder of the current year" may be extended at the higher rate during the budget year.

Agency Program Calls and Budget Calls as long as can be remembered have either specifically expressed the "no inflation" concept contained in OMB Circular A-11 or have simply referred to the circular in general as the guideline for preparing estimates. Informal guidance by Agency officials from time to time may have given encouragement to the estimators at office levels to provide for some anticipated inflation but the extent of such informal guidelines if existent is unknown.

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In actual practice very minor inflation not covered by Circular A-11 can be detected. One exception in the FY 1976 budget is a slight increase in some of the continuing research and analysis contracts (non R&D) in the intelligence production offices of the DD/S&T. A four to five percent increase was budgeted for in these few cases. All offices requesting R&D contractual funds in their budgets used current prices (May or June 1974) in estimating FY 1976 program and project levels. Although a number of increases are contained in the FY 1976 Budget at the line item or project level, each increase was justified both within the Agency and in recent OMB hearings as a new effort or thrust as compared with 1975 levels. Estimates for 1976 were first established officially by line item in May of 1974 in the program submission. After control figures for the budget were approved in August the offices of course had the option of updating their prices in terms of August 1974 price levels but only within the already established control figures. In no case is it known that any office deliberately revised its shopping list to include three months of realized inflation from May to August. Similarly after the OMB mark-up in December 1974, it is not expected that any office under normal practice will revise its line item estimates within approved office control figures to provide for inflation from August to December. Merely deletion of items or reduction in level of effort will be effected if R&D funds are cut. Thus, price levels for R&D contracts to be included in the 1976 Congressional Budget will be up to two years behind the levels that will exist during FY 1976.

Other government agencies generally abide by the same A-11 groundrules. One notable exception however is in the Department of Defense. For the past several years an exemption to the pricing guidelines has been granted to DoD to include an allowance for price escalation in its RDT&E, Procurement and Military construction appropriation estimates for major weapons systems and military construction projects. This exemption has recently been extended to permit Defense to also include an allowance for price escalation in the Procurement appropriations for all purchases. The Agency has been aware of and complied with this policy in recent years because of its involvement in the National Programs which are funded in DoD

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appropriations. The Office of Management and Budget has endorsed this exemption to the general rule of "no inflation" and of course would have to approve any additional exemptions that might be granted in the future.

The rate of inflation allowed in the Defense Department budgets is a subject of current debate and deliberation. The previously approved 3% to 5% annual inflation rate is recognized as significantly inadequate in the light of today's escalation which promises to continue well into the future at least through FY 1976. Defense officials feel that realism in cost estimating in the military budget is essential if we are to accurately portray our 1976 defense posture in presenting the President's Budget to Congress. Underestimating the rate of inflation, while better than nothing, causes proportionate and measurable falsification of what the bucks will really buy when the budget year as well as the out-year programs are actually executed.

C. Alternatives in Dealing with Inflation Impact

There appear to be four major ways in which inflation could be provided for in budgeting for R&D contractual programs. The first two are explicit and direct in nature, while the third and fourth are implicit and indirect in approach. The alternatives are:

1. Budgeting for inflation in lump sum within each office's budget.
2. Providing for inflation in the budgeted unit cost of each contractual or project line item.
3. Utilizing the Agency's Contingency Reserve for inflation occurring since the budget was formulated.
4. Implicit allowance for inflation.

1. Budgeting for Inflation in Lump Sum Within Each Office's Budget

For purposes of facilitating understanding of this alternative the discussion will refer to the current

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fiscal year timetable which ends in June of each year. The same principle would apply when the fiscal year is changed in FY 1977 to one ending in September of each year.

In the spring each office would continue to estimate budget year funding requirements in terms of current prices at the line item level. Line items, of course, are contained in various Resource Packages in the current Agency programming system. However, the office would also establish a separate Resource Package for estimated inflation. This package would contain funds for the budget year based on an inflation factor (%) times the total of all R&D contractual funds contained in the other Resource Packages.

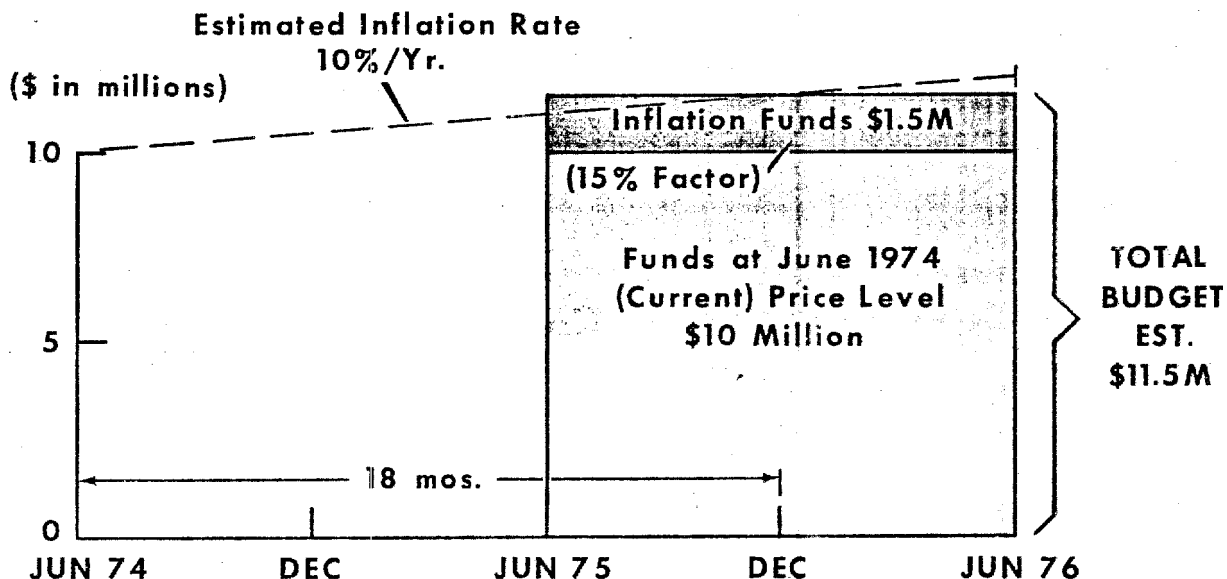
The inflation factor to be used would be based on two elements - a) an annual inflation rate and b) the application of this rate for a period of 18 months, since estimates are made in May or June of each year covering a fiscal year commencing 12 months later and ending 24 months later. The average of 18 months used assumes that contractual obligations occur during the fiscal year on a straight line basis, i.e., 50 percent of the total program will be obligated by the end of December. Thus, if (hypothetically) 10 percent were to be the agreed upon annual inflation rate, the inflation factor would be 15 percent - 10 percent times one and one-half years. The following chart illustrates the concept of using 18 months as a time factor for initially estimating the inflation period:

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Budgeting for Inflation-OMB Budget

Figure 2



During the OMB review in the fall reductions (or additions) would be made in the mark-up on a line item basis based on the uninflated price estimates (June 1974 levels in the example above). Inflation funds then would be adjusted only in proportion to net reductions to the office's R&D budget at June 1974 price levels. However, if the rate of inflation should change considerably between June 1974 and December 1974 a new inflation factor could be arrived at for the ensuing fiscal year and dollars adjusted upward or downward accordingly.

When the Congressional Budget is submitted in January after the OMB mark-up, the inflation costs for that portion of the 18 months which occurred between June 1974 and December 1974 — 6 months — would be

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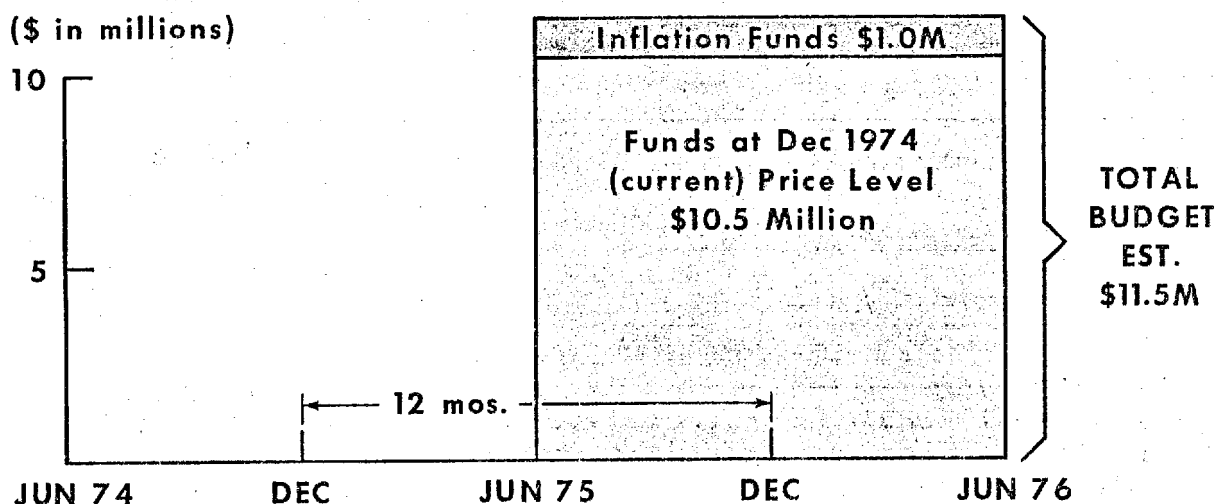
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added to the cost of line items in the budget, along with other reprogrammings that normally take place. The inflation factor for the Congressional Budget would correspondingly be reduced based on the reduction from 18 months to 12 months time period; that is, the line items in the Congressional Budget would be costed at December 1974 price levels (then current) and the inflation factor would be 10 percent covering the one year period from December 1974 to December 1975. The following chart reflects this adjustment based on the previous chart (excluding possible OMB cuts):

Figure 3

Budgeting for Inflation-Congressional Budget



In July of 1975 as the FY 1976 budget is about to be executed, the Inflation Resource Package would be eliminated as an FY 1976 entity and the entire \$11.5 million budget in the example would be programmed and allotted on a line item basis. Holding the \$1.0 million or part of it in reserve until the full 12 months of inflation occurs would be most cumbersome and cause needless administrative manipulation. The purpose would have been served by this time - inflation

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would essentially have been provided for and the FY 1976 R&D program would reflect the level of effort envisaged or approved at the various DCI, OMB, and Congressional decision points in the program-budget cycle in the preceding 12 months.

Inflation estimated to occur during the course of contract execution - say in a cost type contract negotiated in December 1975 and running through December 1976 - would be covered as it is today in the price arrived at in the contract negotiation process. Most of this inflation would be budgeted for in the above example -- at least that occurring through June of 1976. Inflation which occurs after June 1976 would have to be absorbed. If the rate of inflation is greater than that envisaged at contract negotiation time, the increase would be provided for as it is today as a cost overrun through use of prior year unobligated Agency funds. This continued use of prior year funds for cost escalation is basic to the annuality of our budget which is considered to be the most suitable type of Congressional appropriation authorization for the Agency.

2. Budgeting for Inflation Within the Unit Cost of Each Line Item

This alternative would use the same basic concepts as contained in the Lump Sum Alternative - the 18 month time period would be used in calculating the inflation factor at the beginning of the program-budget cycle in June of each year. However, using the previous example each line item in each Resource Package would be augmented by the inflation factor of 15 percent over the estimate based on June price levels. For example, if



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The total budgeted for inflation would not be as apparent to OMB or Congress in this alternative as compared with the Lump Sum Alternative, but both alternatives work to meet the basic problem of budgeting for inflation and avoiding an undeliberate erosion of R&D contract funding from one year to the next.

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3. Utilization of the Agency's Contingency Reserve for Inflation Occurring Since Budget Formulation

A third alternative would involve the use of the Agency's Reserve for Contingencies. Line item prices in June (OMB submission) and December (Congressional Budget) of each year would be based on June prices as is the current practice. On or about December, of the following year, however - half-way through the budget execution phase - a Reserve release would be requested to cover inflation for the same 18 months average at the 10 percent annual rate as described in Alternatives 1 and 2. The increase would be based on 15 percent of the cost of total R&D contractual programs approved in the 1976 Congressional Budget or by a lesser figure if R&D funds are reprogrammed to non-R&D programs. The release funds would be allotted as R&D priorities would dictate in December and not necessarily to the cost of each line item programmed at the time. The release would amount to

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take care of a considerable level of effort which otherwise would have to be sacrificed to offset higher contractual costs accruing by 1976.

The use of the Agency's Reserves for inflation would represent a considerable departure from the current practice and informal guidelines for its use and of course would have to receive full blessing from OMB

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and Congress as an approved rationale in the administration of the Reserve. It would essentially avoid budgeting for future inflation as in Alternatives 1 and 2 but would result in a yearly augmentation to the R&D base exclusive of programmatic cut-backs or additions that may have been decided upon in the program-budget cycle.

4. Implicit Allowance for Inflation

A fourth alternative of providing for inflation is most implicit and indirect. Program and budget requests down to the line item level would be estimated at current day prices without any specific allowance for future inflation as in Alternatives 1 and 2. The approved level of the budget year R&D program however would be considerably higher than the current level with full awareness that a considerable portion of the increase will actually be eaten up by inflation by the time the program is executed.

For example, if the Agency were to budget for a 20 percent increase in the R&D program but 15 percent was agreed to as a reasonable increase required to cover inflation through the budget year, then the budget allowance would actually be providing for a 5 percent increase in new thrust. The other 15 percent increase budgeted would eventually have to be reprogrammed to cover inflation in base program costs. If a level program effort between the two years were decided as appropriate, then only a 15 percent increase would be approved under this alternative. The budget increase would be justified overtly on a line item requirements basis, and inflation pressures would only be mentioned in general as justification for the R&D level requested.

This method of providing for inflation obviously does not call a spade a spade. It relies on the patience, tolerance and constant awareness of the inflation factor on the part of the budget reviewers as they apply the red pencil in "marking-up" the budget; there is no way for management to determine the specific rate of inflation provided for. A serious management problem — inflation — has no visibility to management. Offices would have to realize that their budget provides full allowance for inflation. They would be expected (as they are now) to make reprogramming cutbacks to cover inflation in the higher

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priority programs which has occurred since the budget was prepared.

This alternative is an improvement over the current system in that it at least implicitly provides an allowance for inflation as program and budget decisions are made.

D. Pros and Cons of the Four Alternatives

<u>Pros</u>	<u>Cons</u>
<u>a. Lump Sum Alternative</u>	
(1) Visibility of inflation funds throughout the budget review cycle.	(1) Traditional reluctance to openly budget for inflation.
(2) Facility of adjusting inflation funds as new rates of inflation occur.	(2) Temptation to cut inflation funds to accommodate arbitrary budget reductions.
(3) Budget adjustments would continue to be based at the line item level on comparable levels in the budget year versus current year.	(3) Slight difficulty of spreading the inflation costs when racking up the Agency's budget into various program categories.
<u>b. Line Item Alternative</u>	
(1) Avoidance of budgeting for inflation in aggregate terms.	(1) Lack of full visibility of inflation funds. You talk about inflation but you don't show it.
(2) More consistent with traditional budgeting procedures.	(2) Difficulty in determining how much is in budget for inflation - in total or by line item.
(3) No problem in displaying budget by program category.	

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c. Reserve Release
Alternative

(1) Would avoid budgeting for inflation but would ultimately provide for inflation.

(2) Inflation funds would essentially be based on actual rates rather than on estimated rates.

(1) Extension of use of Agency's Reserve would not be politically palatable.

(2) Complexity in administration.

(3) Unaccountability of actual use of Reserves which for the most part has been the desired practice in the past.

(4) Inconsistent with the basic purpose of the Reserve.

d. Implicit Allowance
Alternative

(1) Avoidance of budgeting for inflation in aggregate terms.

(2) No problem in displaying budget by program category.

(1) Lack of full visibility of inflation funds. You talk about inflation but you don't show it.

(2) Difficulty in determining how much is in budget for inflation - in total or by line item.

(3) Continuation of current system of presenting a specific program which has no chance of being accomplished.

(4) Difficulty in relying on budget review restraint at the line item level so as to provide for inflation in toto.

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III. Conclusions

A. Inflation has had a severe impact on the Agency's R&D Program as it has had on all other Agency funded programs.

B. While the Agency has obtained additional funding in the past for government-wide pay raises in the form of supplemental appropriations, appropriation transfers, or by Reserve releases, such has not been the case to cover inflation in the R&D contractual program. Actual R&D contract funds have declined

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C. This reduction in Agency R&D effort has forced or reflected in its largest effects (1) the virtual elimination of high cost intelligence collection and [redacted] by FY 1975 (2) a significant reduction across-the-board in level of relatively low cost development projects in support of Agency operations and programs (3) curtailment of exploratory research on new technology and new techniques to advance our capabilities of the future.

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D. In accordance with guidelines established by OMB the Agency does not budget for inflation. It is noted that an exemption to these guidelines has been granted in recent years in at least one instance involving DoD procurement, RDT&E and Military Construction Appropriations. Failure to budget for inflation in the Agency R&D program itself has caused a sizable portion of the diminution in R&D effort indicated in paragraph C above. Secondly, the inflation impact on other Agency programs, requiring the reprogramming of funds within fixed appropriation ceilings, has been a further cause for retrenchment in R&D programs. Thirdly, some of the cutback in R&D has been due to the interaction of programmatic considerations and general budget level considerations irrespective of inflation.

E. Productivity gains in past years resulting both from R&D efforts themselves or from Agency-wide actions have served somewhat to reduce the impact of inflation on the Agency budget. The extent of these gains is largely unmeasurable where it is manifested

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in our ability through R&D and innovation to collect, analyze and produce more intelligence than we otherwise would. Other productivity gains as reflected in part by the continuing reduction in Agency personnel over the years would appear to be less difficult to measure. Whatever the productivity gains have been or continue to be, the R&D budget does not even reflect a constant dollar level over the years to offset a declining dollar value as already described.

Traditionally it has been assumed in government circles (and by OMB in particular) that productivity gains should offset inflationary pressures within an agency's budget — thus, probably the long established guideline of not budgeting for inflation. This policy has validity up to a point when inflation rates are very moderate. Unfortunately today's double digit inflation undermines the justification of the guideline. Consequently we have no conceivable hope today of accomplishing the R&D program we are budgeting for in FY 1976 unless corrective action is taken. Severe reprogramming in the form of cutbacks will have to be effected within the R&D dollars budgeted to pay for a significant reduction in what the dollars will buy if inflation continues.

F. Providing for inflation in the current and future years appears to be a realistic approach to the presentation of our R&D budget to OMB and Congress. It should be flexibly handled and of course eliminated at such time as inflationary rates are reduced to a point where productivity gains can reasonably be expected to offset the inflation.

G. The pros and cons of the four alternatives discussed have been presented in Section IID. The "Reserve Release" and "Implicit Allowance" alternatives were quickly discarded as undesirable choices in solving the problem—the former, because funds in the Reserves are limited, they should be used essentially for emergencies or unanticipated projects, and the use of the Reserves for inflation with the inherent complexities involved might undermine the entire concept of the Reserve and its continued use. The Implicit Method is discarded because, true to its definition, it is implicit as well as being devious and unreliable in insuring a proper provision for inflation throughout the program-budget cycle.

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The choice between the Lump Sum Alternative (within each office) and Line Item Alternative is more difficult to make. At first blush the Lump Sum Method, while unorthodox to traditional concepts of budgeting, is refreshingly honest, straightforward, and rational in approach. It would also be easily manageable because of its visibility throughout the review cycle. And if we in the Agency and OMB are to acknowledge the importance of providing for inflation in the preparation of our budget estimates, why should we not deal with the issue openly and avoid any overtones of budgetary ambivalence? As already implied, however, the Lump Sum Method with its openness is perhaps not acceptable politically. One of the fears here is that if Congress were to ask for a line item breakdown of our R&D program, we would be forced to single out the various amounts (lump sums) budgeted for inflation. This in turn might precipitate a prolonged and unproductive discussion of the reasonableness of the inflation rates contained in the President's Budget.

Therefore, it would appear the Line Item Alternative with the inflation dollars carried within the line item costs is a less controversial method. It would get the same job done though with slightly more bookkeeping problems than in the Lump Sum Alternative. It would also coincide with methods used elsewhere in the government (e.g., DoD) in providing for inflation. It appears to be the best solution.

H. While budgeting for inflation will help to present a realistic picture of what our requested R&D program for next year really is, we should continue to look at ways in which we can protect the interests of the taxpayer (and the Agency) as we conduct our R&D program. The contracting process — from the initial drawing up of Requests for Proposals (RFP) to the final settlement of contracts — provides a number of opportunities for economy and efficient ways of achieving our R&D goals. Since the focus of this study is on inflation itself and ways of budgeting in response thereto, we have chosen only to list a few measures involving the contracting process which could serve as a guide to our project and contracting officers in protecting the interests of the taxpayers. These measures are not new and have been developed over the years from experience gained in the Agency (and outside) in doing business with a large number of contractors. The list of measures is attached as Exhibit B in this report.

IV. Recommendations

The study group recommends:

- that the Agency budget for inflation by the inclusion of an appropriate factor in each line item in the R&D contractual program (Alternative II in this report).
- that the CIA Comptroller initiate action to obtain concurrence from OMB which would allow inflation to be covered not only for the R&D contractual program but also for other affected portions of the Agency's budget.
- that the CIA Comptroller establish appropriate guidelines and rates of inflation to be used, taking into consideration the findings of this report, inflationary estimates developed by OER, and current procedures utilized by DoD and in the community as appropriate.

The group further recommends that, to insure the best use of scarce R&D dollars, guidelines specifically related to the inflation question be extracted from existing materials and amplified along the lines of Exhibit B. The Office of Logistics should publish such guidelines in a convenient format for use by Agency contracting and project officers.

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Exhibit A

INFLATION AND THE INTELLIGENCE
COMMUNITY 1/

1975 - 1980

1. (Unclassified) In order to calculate the effect of inflation on the Intelligence Community's programs for the remainder of the decade, it is necessary to develop inflation factors for the following cost elements:

- (a) RDT&E
- (b) PROCUREMENT
- (c) OTHER PURCHASES
- (d) PAY

2. (Unclassified) This study has been highly eclectic. Neither the time nor the data resources were available to do basic research on intelligence-unique prices. Fortunately there has been some work in DoD which can be adapted to this purpose. Basic economic projections are available from the private sector which have the necessary objectivity.

3. (Unclassified) The first requirement is to obtain valid forecasts of the overall inflation rate and the second is to derive therefrom a reasonable rate for the specific cost elements listed above. Obviously forecasts are uncertain. Projections made last spring

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1/ Source: Internal Memorandum from
IC Staff, of 19 November 1974

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Exhibit A
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were considerably more optimistic than current projections. By next spring projections will differ from those in this paper. Nevertheless the basic economic projections upon which the cost element inflation factors are based are the best available and display a reassuring consensus. 2/ A following section, Sensitivity Analysis, will examine the implications of using different projections of the overall inflation rate.

4. (Unclassified) RDT&E and PROCUREMENT. The Aeronautical Systems Division of Air Force Systems Command conducted a research study of price escalation indices since 1958 for:

- a. Airframe development; airframe production
- b. Engine development; engine production
- c. Avionics development; avionics production

They then regressed this data against the GNP Deflator to obtain equations expressing the relationship of each of the six indices and the GNP Deflator. Essentially the study showed a high correlation with the aeronautical inflation being significantly higher than overall inflation. The latest (Oct 74) projections of the GNP Deflator were obtained from the Wharton EFU model and the equations were applied to them (after having arithmetically averaged the R&D components and the Production components). This yielded a projected R&D inflation rate and a projected Production (PROCUREMENT) inflation rate as follows:

<u>FY</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>
R&D	13.6%	10.6%	7.9%	7.7%	7.9%	7.6%
PROCUREMENT	12.9%	10.2%	7.5%	7.3%	7.6%	6.4%

2/ The econometric models of Wharton and Data Resources, Inc. were primary sources. Additionally there were other studies and public statements which reinforced the model forecasts.

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Using these factors implies four assumptions:

a. That the historical price indices are valid. (The Air Force was confident enough to present the data in Congressional hearings.)

b. That the type of work included in the contracts administered by ASD is representative of that in the Intelligence Community. (The technology level is somewhat higher in intelligence systems probably, but that does not necessarily imply higher inflation. Perhaps the most significant point is that the contractors for ASD and for the Intelligence Community tend to be in the same industry. Additionally the customer is the same. It is likely that price escalation will be similar.)

c. That the future will resemble the past; i. e., that regression analysis is applicable. (It is nowhere written that the inflation rates over the next five years in a particular industry will bear the same relationship to overall inflation that it did over the past fifteen years. Given the high correlation coefficients and the absence of compelling reasons to assume otherwise, this does seem to be a reasonable assumption however.)

d. That the projected overall inflation factors are valid.

5. (Unclassified) OTHER PURCHASES. Other purchases comprise non-pay money in O&M accounts. For this cost element it was decided to use the raw GNP Deflator series upon which the PROCUREMENT and RDT&E factors are based. There are historical relationships which could be used in a regression analysis, but inspection shows that the absolute difference between the two (GNP Deflator and Federal Purchases of Goods and Services) is not great but that the correlation coefficients would not indicate reliability. Therefore, the overall GNP Deflator is probably as good a measure as any for this cost element:

<u>FY</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>
OTHER PURCHASES	9.8%	7.9%	5.9%	5.9%	6.2%	6.0%

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Exhibit A
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6. (Unclassified) PAY. For this cost element the "compensation per man-hour in the private non-farm sector" was plotted against the CPI for 1958 through 1976, using the Data Resources Inc. projections for 1974, 1975 and 1976. Then the federal pay raises enacted under Sec. 5305, Title V of the U.S. Code were plotted. Because the history of the pay legislation is short and the most recent history of the relationship between CPI and compensation is unprecedented in the available data series, a statistical analysis is inappropriate. A reasonable assumption would seem to be that the increase in federal pay will be somewhere between the CPI and compensation in the private sector, as the plots seem to indicate. In the case of FY 1975, there will be no further inflation, of course. For FY 1976 it is certain that the federal sector pay will be determined from private sector pay which is up 10 percent. Thus the following inflation rates appear to be reasonable:

<u>FY</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>
PAY	--	8%	7%	6%	6%	5%

7. (Unclassified) Sensitivity Analysis. To test the projections for effect of forecast error, three sets of indices were constructed. The "Best" set was based on the year-to-year inflation rates above with FY 1974=100. The "High" and "Low" sets assumed $\pm 2\%$ for each year-to-year rate. It is highly unlikely that such a large and systematic difference between actual and forecast would occur. By comparing the FY 1980 index for the cost elements in all three cases, i.e., "Best", "High", "Low", it was determined that the index for "High" differed by approximately 10.6 percent. (The difference in the "Pay" cost element was somewhat lower because no inflation was assumed in FY 1975.) The significance of these differences is that FY 1980 projected budgets would only differ ± 10 percent from "Best" using the "High" or "Low" inflation rates, while the intervening years would have even less variance.

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Exhibit B

Sample Guidelines to Project Managers to Protect the
Taxpayers Interests During Inflationary Periods

1. Provide clear work statements so that competitive proposals may be obtained for R&D tasks.
2. Plan for each procurement so that adequate time can be given for proposal solicitation, evaluation, and negotiation.
3. Place contracts as soon as possible so that work can be performed at an earlier time when labor and material costs are lower.
4. Utilize fixed price contracts whenever possible.
5. Estimate the trend of rising costs and include in the total contract price for relatively short term contracts (less than two year duration).
6. Review with the contracting officer the use of Economic Price Adjustment Clauses on longer term major procurements which involve sizable expenditures in the future.
7. Reduce the number of change orders made during contract performance.
8. Prevent any delays in contract performance that would require the contractor to perform at a later and higher cost period.
 - a. Ensure that government furnished property is delivered on time.
 - b. Arrange for funding in a timely manner.
 - c. Identify critical materials that may be in short supply so that steps can be taken early in contract performance to ensure timely deliveries.

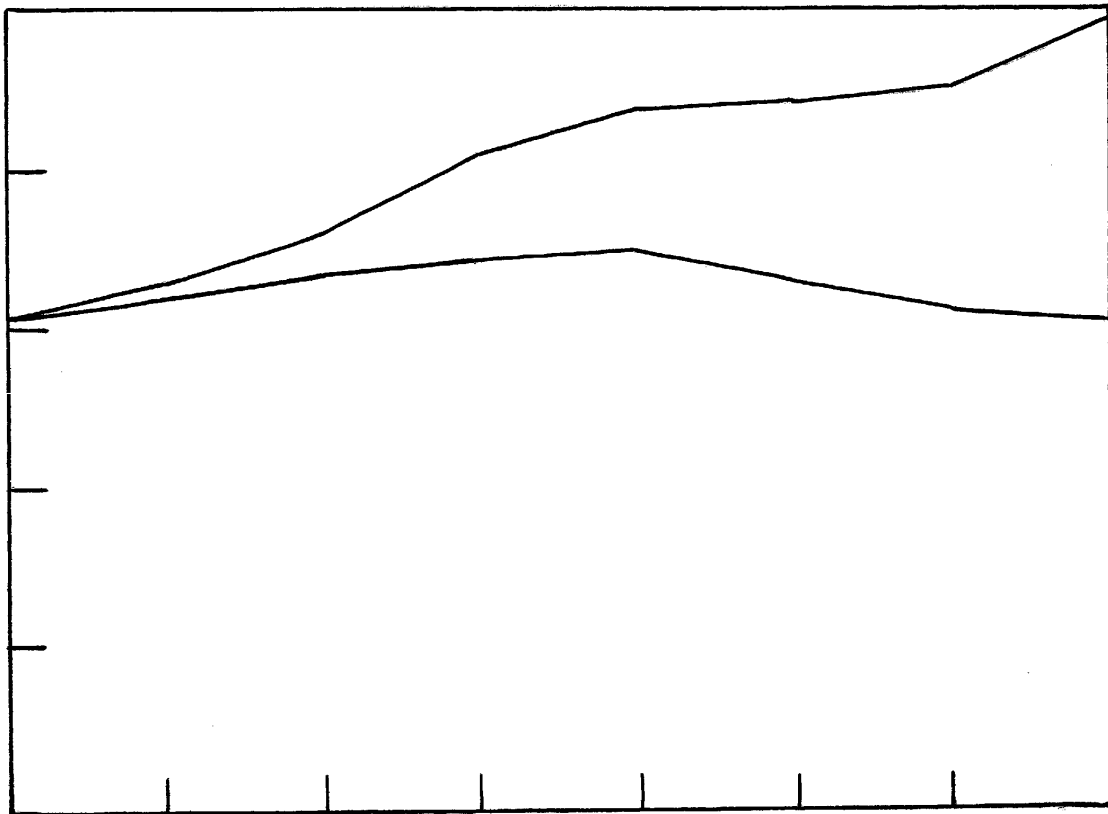
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